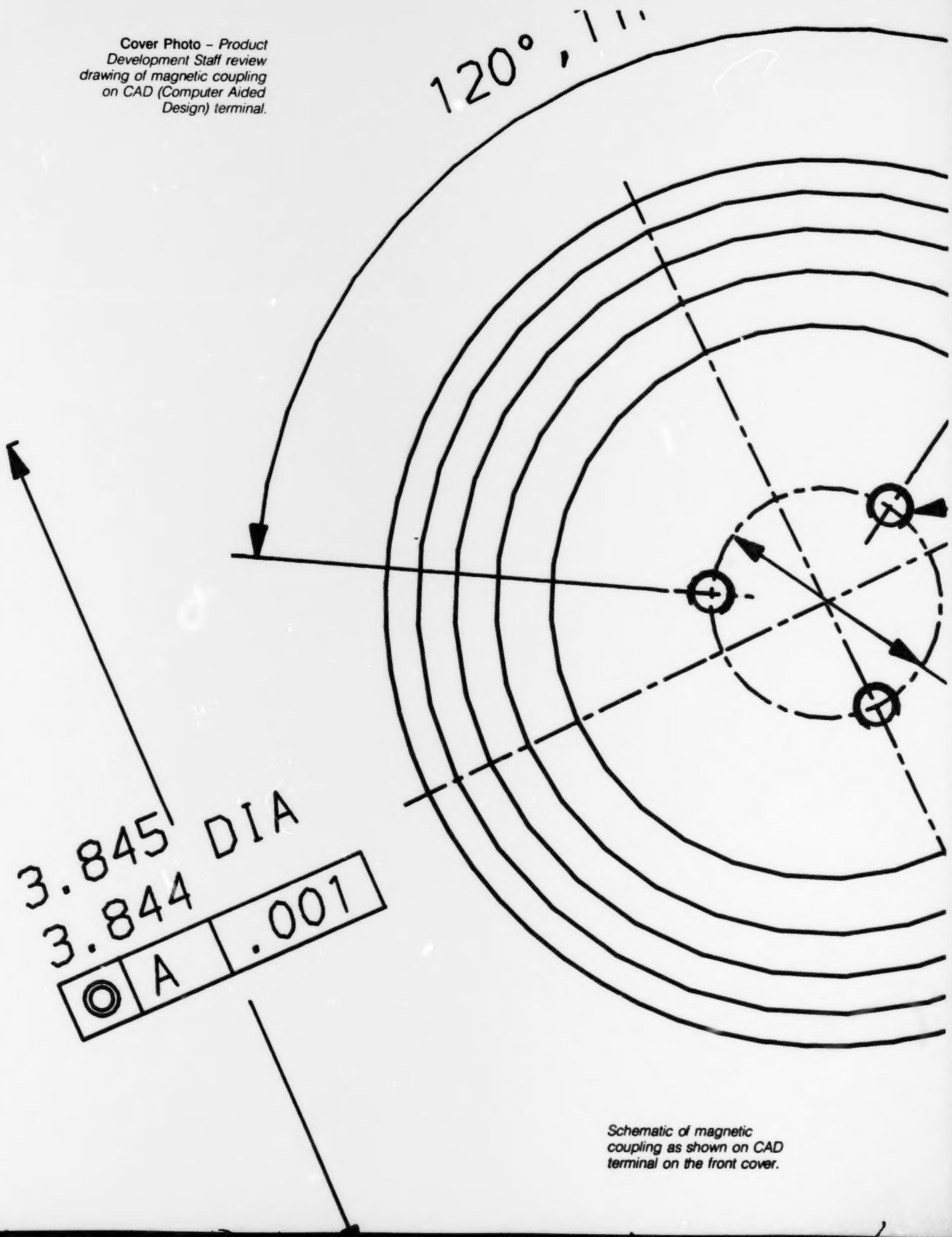
Nova Scotia Research
Foundation Corporation
Annual Report 1985/86

TECHNOLOGY IN ACTION

Cover Photo – *Product Development Staff review drawing of magnetic coupling on CAD (Computer Aided Design) terminal.*



Schematic of magnetic coupling as shown on CAD terminal on the front cover.

Corporate Profile

Nova Scotia Research Foundation Corporation was established in 1980 by the Province of Nova Scotia to use science and technology to assist in the economic development of Nova Scotia.

Three operating divisions — Industry Services, Applied Science and Product Development — carry out technical assignments each year for 600 companies and government departments.

The Corporation provides assistance to industry in the form of today's technical problems and new product process innovation in response to tomorrow's opportunities. While the Corporation uses its capabilities to serve all sectors of Nova Scotia's industrial economy, particular emphasis is placed on technological support for secondary manufacturing industry. The Corporation emphasizes the potential for ocean industry development in Nova Scotia.

Industry Services

Technical assistance to small and medium sized manufacturers to improve productivity and technological capabilities.

Field Service
- Technical Information/Literature Searches
- In-Plant Problem Solving
- National Research Council's Industrial Research Assistance Program
- Technology Transfer
- Technology Patent Searches

Project Services
- Market Analysis
- Fisheries Engineering
- Agricultural Engineering
- Mathematics and Computer Applications
- Glassblowing

Materials
- Mechanical and Metallurgical Testing
- Welding Procedure Qualification
- Failure Analysis
- Ceramics R&D
- Corrosion R&D

Library
- Computer Data Base Searches
- Technical Searches

Applied Science

Assistance to industry and government with R&D and scientific services related to Nova Scotia's natural resources.

Coal Technology
- Process development and economic studies relating to the utilization of Nova Scotia's coal resources
- Coal liquefaction R&D
- Spray testing and rheology studies on coal-liquid fuels
- Mineral utilization and industrial-waste management

Analytical and Environmental Chemistry
- Lube Oil Wear Analysis
- Drinking and Process Water Assessment
- PCB's
- Asbestos
- Air Quality Monitoring
- Pressure-treated Wood Quality Monitoring
- Instrumentation for Fish Quality Assessment

Biology
- Mycorrhizal fungi R&D to improve growth of coniferous trees and agricultural crops
- Nitrogen fixation in agricultural crops
- Liquid and semi-solid bacterial and fungal fermentations
- Microbiological analysis
- Quality and sanitation surveys of food handling operations

Geophysics
- Marine Surveys for Geotechnical and Geological Studies
- Land Geophysical Surveys
- Borehole Geophysical Logging
- Data Reduction, Analysis and Interpretation

Product Development

Engineering, manufacturing and marketing to develop Nova Scotia products for international markets.
- Marine Electrical Slip Rings
- Fluid Rotary Unions
- Diving Life Support Equipment
- Geophysical Marine Equipment
- Underwater Instrumentation

Exports sold to the world's leading manufacturers of Agents and distributors located in Canada, U.S.A., Gulf States, U.S.A., Nova Scotia, U.S.A., United Kingdom, Norway, Sweden, [illegible]

Nova Magnetics Limited, a wholly-owned subsidiary, designs, manufactures and markets magnetically-coupled "zero leakage" blowers and pumps for the nuclear and chemical industry.

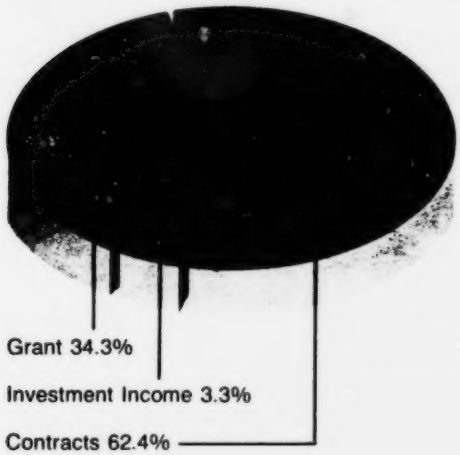
Mechanical/electronic engineering and product design assistance for Nova Scotia industry.

Microelectronics [illegible] the Applied Microelectronics Institute, a joint venture of NSRFC, Dalhousie University and the Technical University of Nova Scotia.

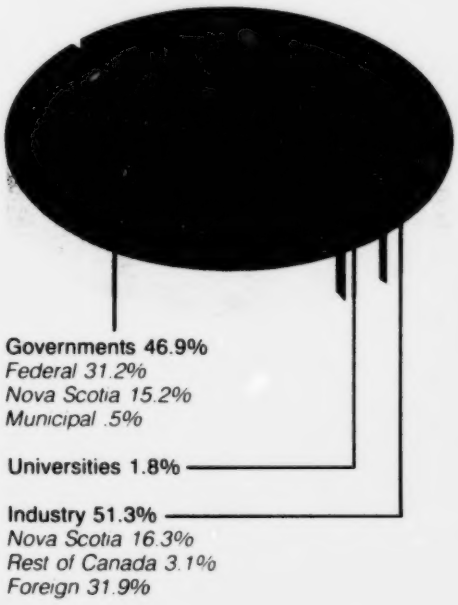
Financial Summary

	1986	1985
Income		
Scientific & Engineering Contracts	**$4,054,797**	$3,950,453
Grant from Province of Nova Scotia	**2,233,100**	2,250,000
Investment Income	**214,998**	215,611
Expenses		
Science and Engineering	**5,590,367**	5,137,014
Administration & Occupancy	**1,123,224**	1,205,235
Net Income (Loss)	**(210,696)**	73,815

Source of Revenue 1985/86

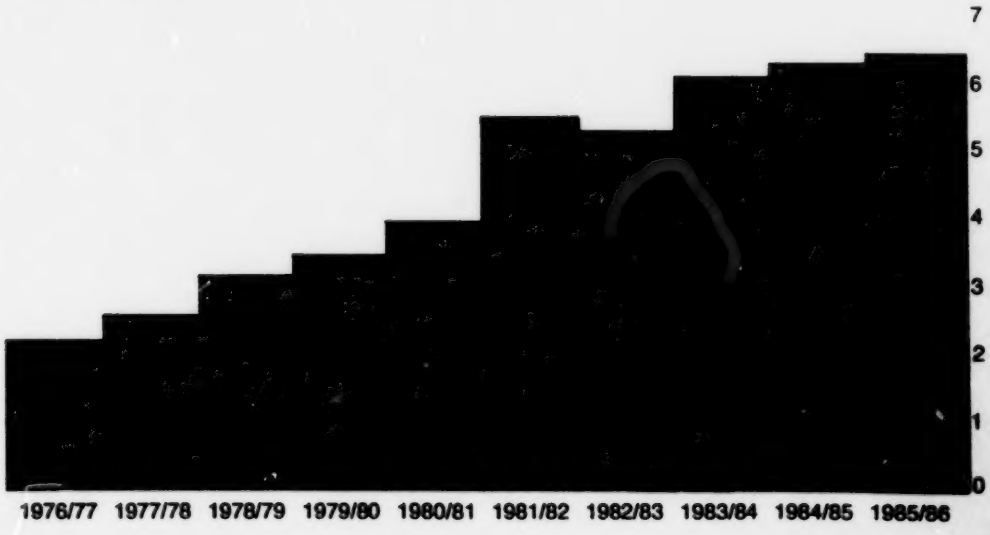


Source of Contracts 1985/86



Ten Year Summary

Millions of Dollars



President's Report

Honourable Roland Thornhill
Minister of Development
Province of Nova Scotia
Halifax, Nova Scotia

Sir:

I have the honour to submit the thirty-ninth Annual Report of the Nova Scotia Research Foundation Corporation.

Respectfully submitted,

T.B. Nickerson, P.Eng.
President
Dartmouth, Nova Scotia
November 1, 1986

1985/86 was a year of conflicting results for the Corporation. Significant strengthening of the Corporation's expertise, facilities and delivery of technical services to Nova Scotia industry was offset by a disappointing financial performance with a loss of $210,000.

Total income increased marginally to $6,502,895. Moderate growth in most areas was neutralized by an 18% decline in ocean hardware and service activity as offshore exploration worldwide was deferred or reduced in response to the sharp decline in oil prices. Reduced offshore activity will continue to adversely affect financial results in the near term.

The dollar volume of contract work undertaken for Nova Scotia industry was up 43% and the number of technical inquiries processed under the National Research Council's IRAP Program increased 17%. In total NSRFC handled 4,222 assignments for over 600 companies in Nova Scotia, helping to solve today's technical problems and develop new products for tomorrow's market opportunities. The strong growth in demand for technical services reflects the increasingly important role of technology in developing and maintaining industrial competitiveness.

NSRFC's two joint ventures with universities, the Applied Microelectronics Institute (NSRFC, Dalhousie and the Technical University of Nova Scotia) and the Atlantic Institute of Biotechnology (NSRFC, Dalhousie, TUNS and the Nova Scotia Agricultural College), continue to demonstrate the benefits of combining resources to better serve both educational and industrial needs.

A new organization, the Atlantic Farm Mechanization Institute, was formed by a group of Atlantic Region farmers to focus on technological improvement in farm machinery used in Atlantic Canada. NSRFC is providing management services and organizing the Institute's initial R&D activities.

The Corporation, in conjunction with three local consulting companies, was awarded a major contract through the Inter-American Development Bank to assist in strengthening the fishery infrastructure in Nicaragua. This work will extend over a 30 month period.

Nova Magnetics Limited, the Corporation's wholly owned subsidiary, completed the first application of its laminated barrier technology enabling the "zero leak" magnetic coupling of high horsepower levels through pressure vessel barriers. The initial application, the result of a cooperative effort between Nova Magnetics Limited and Autoclave Engineers Inc. of Pennsylvania, involved the magnetic coupling of 20 horsepower into a 10,000 psi pressure vessel. This initial unit was supplied to a British company producing a specialized plastic product. The laminated barrier technology has the potential to provide "zero leak" coupling of mechanical power at levels of several hundred horsepower.

With financial support from the Canada/Nova Scotia Technology Transfer Subsidiary Agreement, NSRFC, together with several other organizations, is implementing a Computer Aided Design and Manufacturing (CAD/CAM) initiative to encourage and support industry adoption of these and other advanced manufacturing technologies. NSRFC will assist small companies to identify and pursue opportunities where CAD/CAM can enhance competitiveness; demonstrate the application of an integrated CAD/CAM system in its product development/manufacturing/marketing function; and provide CAD/CAM support for companies in the new Technology Innovation Centre being built adjacent to NSRFC.

The Technology Innovation Centre, adjacent to NSRFC, is under construction as is the new road linking NSRFC with the Innovation Centre and the Woodside Ocean Industries Park. Both of these projects should be completed by the end of 1986. The Innovation Centre will be an incubator mall providing emerging "high tech" companies with space, common user services and ready access to NSRFC's expertise and facilities.

These initiatives are important components in the Corporation's ongoing program to enhance its capabilities in new technologies and to respond to the evolving technology needs of Nova Scotia industry.

I am grateful to all members of the Corporation's staff and Board of Directors for their dedication, understanding and support during the past year as we addressed immediate problems while at the same time putting in place the foundations for the future. I would like to express particular thanks to Dr. R.H. Magarvey who retired from the Board after almost 40 years of active involvement in the affairs of the Corporation, dating back to the founding of the Nova Scotia Research Foundation in 1946.

The Corporation has achieved a great deal in its first 40 years. Much more remains to be done. At the Provincial Conference on the Economy held in Halifax a recurring theme was the vital role of technology in "Meeting the Challenge of Change". There was widespread agreement that all sectors of the economy must accelerate the process of applying technology to enhance competitiveness. NSRFC is preparing to play an enhanced role in support of this process.

The investments needed to apply existing technology and develop new technologies are substantial. Canada's major trading partners have already invested heavily and are aggressively putting technology into action to fuel their economic growth. We cannot afford to delay our investments in technology until tomorrow when there is widespread agreement that the benefits are needed today.

Applied Science

The Applied Science Division, encompassing Geophysics, Coal Technology, Analytical Chemistry and Biology, emphasizes R&D and services related to Nova Scotia's natural resources.

The level of **Geophysics** activity was moderate, reflecting the depressed prices in the energy and mineral markets. Activities included the sale of gravity data, gravity anomaly modelling of a New Brunswick potash deposit, magnetometer and refraction seismic measurements over a dam site and cable route, the interpretation of deep-tow multichannel refraction data from the Scotian Shelf and the collection and analysis of rock specimens for sulphide content to assist environmental studies.

Control console for coal liquefaction unit.

Borehole logging was done in support of coal investigations by the Nova Scotia Department of Mines in Cape Breton, Springhill and Pictou and as part of mineral investigations at New Ross.

Marine geophysical surveys were carried out for a rig site survey on the Scotian Shelf and on the annual Dawson test cruise in conjunction with Dalhousie University, to study sand waves in the Sable Bank area. Inshore marine surveys for dredging investigations were completed in Nova Scotia, New Brunswick and Prince Edward Island.

A new venture was the presentation of a course in geophysical methods with particular reference to marine geophysics for students from the Nova Scotia Land Survey Institute (since renamed the College of Geographic Science).

Coal Technology activity has concentrated on developing new and better uses for coal through the application of advanced and emerging technologies.

Pilot plant investigation of the direct liquefaction of Sydney area coals continued with emphasis on integrated two-stage thermal/catalytic processing. An intensive two year program has been initiated to assess coal reactivity and to evaluate catalyst performance. High coal conversions and good liquid hydrocarbon yields have been demonstrated using conventional hydroprocessing catalysts in the second stage reactor. Future work will concentrate on longer term tests to determine ultimate process yields and product composition. This coal liquefaction research is funded jointly by the Federal Department of Energy, Mines and Resources and the Nova Scotia Department of Mines and Energy.

A spray test facility unique to Canada was designed and built during the year to conduct atomization studies on coal-water fuels (CWF). The facility is equipped with both laser and photographic systems to measure droplet sizes generated in a non-combustion environment. Atomizers up to a small industrial scale can be tested. Instrumentation has also been assembled to measure the rheological properties of fuels at low to very high rates of shear. Over the next year correlations between the CWF spray test results and the rheology measurements will be developed. This work is funded under the Canada–Nova Scotia Oil Substitution and Conservation Agreement.

Analytical and Environmental Chemistry provided a wide range of chemical analysis service for 170 clients in industry and government. The lubricating oil quality control program and the analysis of PCB's in transformer oils and soils were expanded during the year. Other analysis areas include metal ions and organics in drinking and process waters, hydrocarbon fuels, asbestos, pressure treated wood products and fish products (for quality control).

An indoor air quality monitoring service was initiated to evaluate the air quality in homes and offices by measuring temperature, humidity and particulate matter and testing for formaldehyde and other chemical contaminants.

A new, timely area of involvement is in the evaluation of fish quality. A prototype fish freshness indicator has been constructed for Fisheries and Oceans Canada.

For the past two years a multidisciplinary group has been studying the effective utilization of Nova Scotia's indigenous energy resources for the Nova Scotia Department of Development. We now have a computerized database containing over 700 entries related to energy resource development, a financial model for project assessment and a resource input/output model for linkages development.

Biology continued its multi year mycorrhizal fungi research program. These fungi are associated with plant roots and benefit forest trees and agricultural crops by increasing nutrient uptake. A research contract funded under the Federal/Provincial Agriculture Agreement studied the mycorrhizal associations of strawberries. A second contract, funded by the Canadian Forestry Service, concerned the mycorrhizal associations of forest trees.

Bacteria play a major role in the spoilage of fish. However, conventional determinations of the degree of bacterial spoilage are slow and hence often of limited practical value. To provide the fishing industry with a fast fish quality test, work was begun to evaluate a biochemical assay which can provide an indication of bacterial spoilage in less than one hour.

Microbiological services for clients in industry and government included examinations for the presence of pathogenic and non-pathogenic bacteria, yeasts and moulds in water supplies, waste waters, fuels, fresh fish including shellfish, canned and frozen foods, beverages, baking products and confectionery.

Industry Services

The four sections of the Industry Services Division — Field Service, Project Services, Materials and Library — together with expertise in other sections of the Corporation combine to provide a broad range of technical support to assist small manufacturers to improve productivity and adopt new technologies.

Field Service coordinates with the National Research Council (NRC) to deliver the Industrial Research Assistance Program (IRAP) in Nova Scotia, helping industry to solve technical problems, improve productivity and introduce new materials, equipment and technology. There is no charge to the client for services under the IRAP program.

During the year, field engineers made more than 1,400 plant visits and answered 2,600 queries. The technical assistance provided ranged from locating a resource person for a particular job to providing engineering design assistance to improve plant operation. New product ideas were discussed with numerous clients and a number of patent searches were initiated to help determine their patentability. Examples of technical assistance included evaluating the quality of a mineral deposit, solving a container failure problem, setting up an in-house quality control program and lab, introducing microcomputer applications and identifying and implementing a new plastic coating process.

220 Kips material testing apparatus in operation.

The Field Service engineers handled 58 industrial engineering projects, most of which required considerable in-plant observation and study. Clients were assisted in correcting processing machinery and refrigeration equipment problems, establishing a preventative maintenance program, developing new plant layouts, productivity improvement studies, designing management information systems and selecting appropriate materials handling systems.

Field Service helped almost 100 clients make successful application to NRC's financial contribution programs to the extent of approximately $0.5 million. These programs supplement the services mentioned above and reimburse companies part of the costs of students, researchers or consultants.

Project Services provides a variety of specialist technical support for industry and government departments on a cost recovery basis to complement and enhance the division's field services. Market analyses were completed to assist local companies to assess the market opportunities in areas such as aquaculture fish feed, metal fabrication, woodworking and marine maintenance systems. Two optimization studies were carried out to help municipalities determine the best location for new fire stations, taking into account population growth and traffic patterns.

Engineering design and system analysis projects were completed for several Nova Scotia fish processing firms. Under a contract with the Inter-American Development Bank a major study to provide a redevelopment strategy for the shrimp and lobster fisheries in Nicaragua was initiated in conjunction with local consulting firms. This project will take 2 years to complete.

Assistance was provided to a group representing the agricultural industry in establishing the Atlantic Farm Mechanization Institute (AFMI), a non-profit private corporation formed to conduct research, development and testing of farm machinery. The Corporation was retained by the AFMI Board of Directors to administer its affairs and to conduct projects on its behalf.

Corrosion and Materials undertakes both research programs and service work, helping industry solve material problems and utilize new developments in materials science. Research has continued on crack initiation by fatigue, on the effects of fatigue on steel plates in various environments, and on erosion resistant ceramic materials.

On the service side routine procedures, tests and analyses were completed for 78 clients. These included analysis of corrosion inhibiter effectiveness, failure analysis of items such as shafts and bearings, weld procedures and various weld qualification tests.

New additions to the **Library** covered diverse subjects such as materials science, computer applications, CAD/CAM and robotics, quality control, applied microbiology and botany, geophysical methods, pressure vessel technology, fisheries, coal science, chemistry, agricultural machinery, information science, business and plant management and general engineering and technology. The Librarian online literature searching capability was enhanced by the addition of the Pergamon Infoline and Supplyline Systems.

Product Development

The Product Development Division is responsible for new product development activity at NSRFC. This includes design, development, technology transfer, manufacture, marketing and sales activity associated with the development and introduction of new Nova Scotia products for world markets. The sharp decline in oil prices during the year resulted in reduced worldwide offshore oil and gas exploration activity, a major market for NSRFC's ocean industry products.

'Tim' undergoing his first tests.

Engineering developed a thermally insulated manikin (nicknamed TIM) for the CORD Group of Dartmouth. The manikin is made of aluminum with articulated arms and legs. Each of the manikin's 13 sections is independently controlled and heated, allowing precise control of skin temperature and measurement of the heat input required to maintain that temperature. Thus TIM can be used for detailed analysis of the thermal insulation properties of the clothing in which it is dressed. This analysis is vital in the assessment of survival clothing for extreme environments. CORD Group are now providing this testing service to manufacturers and users of survival clothing.

A new safety and reporting system for offshore diving operations was developed under a contract with the Canadian Oil and Gas Lands Administration of the Federal Government. Entitled EARS for Emergency Automatic Recording System, the unit records and displays vital physical and operational parameters during diving operations. The system is analogous to the "Black Box" flight recorder used in aircraft.

Another development of the Engineering Section is the new Multipass Fibre Optic Rotary Joint. Being able to couple multiple optical fibres through a rotating joint (optical slip ring) extends the range of the Corporation's electrical slip ring products. Manufacture of fibre optic rotary joints is a shared venture with Focal Marine Limited of Bedford, Nova Scotia. U.S., British and Canadian patents have been applied for.

Manufacturing is responsible for all assembly and manufacturing operations. One of the many contracts currently being completed is the supply of Environmental Control Systems to be used by the Royal Navy on their diving support vessel "Challenger". The contract includes four diving chamber life support systems, heater/chiller units, and electrical slip rings and fluid rotary unions for the umbilical handling gear. Many Nova Scotia and Canadian firms are involved in supplying components for this order.

Sales of the electrical slip rings, fluid rotary unions and hybrid units assembled by the Section totalled $750,000 this year. Sales to the underwater Remote Operated Vehicle (ROV) and geophysical markets were affected by the sharp decline in oil prices during the year. Manufacture of these components relies heavily on Nova Scotia sub-contractors for the supply of precision machined parts. Over 90% of these products are for export markets.

A highlight of the Corporation's subsidiary, Nova Magnetics Limited, was the completion of the first "10,000 PSI Blower". Developed using our patented magnetic coupling technology, this unit established new records for magnetically coupled products with respect to both pressure (10,000 psig = 680 MPa) and power transmitted. The laminated pressure barrier principle, which drastically reduces eddy current losses, considerably extends the operating speeds, pressures and power of the Nova Magnetics line of magnetically coupled pumps and blowers. This product is a result of a cooperative effort between Nova Magnetics and Autoclave Engineers Inc. of Erie, Pennsylvania.

CAD/CAM (Computer Aided Design and Manufacture) are vital new technologies for many design and manufacturing operations. Aided by support from both the Federal Government and the Province of Nova Scotia, the Product Development Division commenced installation of a multi-terminal CAD/CAM system integrated with horizontal and vertical axis machine tools. The skills and knowledge gained through application of these technologies in the Corporation's design/manufacturing/marketing activities will be used to assist industry throughout the Province.

Quality Assurance is an important factor as the Division's product range and markets expand. The quality assurance program is being upgraded towards certification of manufacturing operations to C.S.A. Standard Z299.3. In addition to strengthening internal quality assurance this effort has enabled the Division staff to assist other Nova Scotia firms to establish quality programs.

Marketing, in addition to achieving domestic and international sales, is vital in identifying new market opportunities and monitoring technological developments. In the past year the Division exhibited at trade shows in Aberdeen, Washington, San Diego and Halifax. We continue to expand our network of agents and now have representation in: Western Canada, California, U.S.A., Gulf Coast, U.S.A., New England, U.S.A., United Kingdom, Norway, Denmark and Sweden, Holland, West Germany, France, Belgium, Singapore, and Australia.

Financial Statements

Notes

1. Authority
The Nova Scotia Research Foundation Corporation was established in 1975 by the Act to Establish the Nova Scotia Research Foundation Corporation. Its purpose is to assist in the economic development of Nova Scotia by promoting, stimulating and encouraging the effective utilization of science and technology by industry and government.

2. Accounting Policies

a. *Principles of consolidation*
The consolidated financial statements include the accounts of Nova Magnetics Limited which is 100% owned by the Nova Scotia Research Foundation Corporation.

b. *Inventory*
Inventory is valued at the lower of cost and net realizable value.

c. *Fixed assets and contributed surplus*
Fixed assets are acquired by purchase, donation or through the capital equipment reserve.

When fixed assets are acquired out of the general revenues of the Corporation, they are charged to expense in the year of acquisition.

The costs of all capital additions, whether by purchase, donation or capital equipment reserve, are recorded as fixed assets, with an offsetting credit to contributed surplus.

When fixed assets are constructed by the Corporation, the related material, labor and overhead costs are included as fixed assets in the year of expenditure.

When equipment is ten years old, the cost is removed from both the fixed asset and contributed surplus accounts.

3. Capital Equipment Reserve
The Corporation maintains a reserve for future years' purchases of fixed assets. Fixed assets purchased in the current year amounting to $42,850 were charged to the capital equipment reserve thereby reducing capital expenditures by this amount.

4. Loan Guarantees
During the fiscal year ended March 31, 1984, the Corporation provided a guarantee of $90,000 to the Royal Bank of Canada as security for a loan from the bank to the Applied Microelectronics Institute. On March 31, 1986, the balance outstanding on this loan was $17,500.

During the year ended March 31, 1986, a further guarantee of $50,000 was provided to the bank to support a line of credit obtained by the Applied Microelectronics Institute.

5. Subsequent Event
On March 21, 1986, the Corporation received approval from the Government of Canada to purchase computer equipment and software under the Federal/Provincial Technology Transfer Subsidiary Agreement. The objectives of this project are to establish computer assisted design and computer assisted manufacturing capabilities at the Corporation. The total grant authorized under this agreement is $1,350,000. On April 21, 1986, the Corporation received $1,036,525 for purposes of implementing this project.

6. Comparative Figures
During the year, the Corporation adopted the policy of recording marketing costs as a part of scientific and engineering expenses. Comparative expense figures for March 31, 1985 have been restated to conform with this new presentation.

Auditor's Report

To the Chairman and Members of the Board of Directors
of the Nova Scotia Research Foundation Corporation

I have examined the consolidated balance sheet of the Nova Scotia Research Foundation Corporation as at March 31, 1986 and the consolidated statements of revenues and expenses and retained earnings for the year then ended. My examination was made in accordance with generally accepted auditing standards, and accordingly included such tests and other procedures as I considered necessary in the circumstances.

In my opinion, these consolidated financial statements present fairly the financial position of the Corporation as at March 31, 1986 and the results of its operations for the year then ended in accordance with the accounting policies stated in Note 2 to the financial statements, applied on a basis consistent with that of the preceding year.

O.P. Cormier

O.P. Cormier, F.C.A.
Auditor General

Halifax, Nova Scotia
June 6, 1986

Consolidated Balance Sheet

Assets

	1986	1985
Current		
Cash	$ 632,959	$ 79,437
Accounts receivable	1,461,506	1,489,893
Short term investments	—	1,225,037
Inventory	392,751	408,814
	2,487,216	3,203,181
Research Endowment Fund		
Province of Nova Scotia 9% promissory note, maturing November 21, 1986	1,000,000	1,000,000
Fixed		
Land and buildings	2,843,267	2,843,267
Equipment	1,604,157	1,556,568
	4,447,424	4,399,835
	$7,934,640	$8,603,016

Liabilities and Equity

	1986	1985
Current		
Accounts payable		
Trade	$ 368,383	$ 408,598
Province of Nova Scotia	1,531,130	1,710,794
Deferred revenue	89,186	331,726
	1,988,699	2,451,118
Research Endowment Fund		
Fund balance	1,000,000	1,000,000
Equity		
Capital equipment reserve (Note 3)	—	42,850
Contributed surplus	4,447,424	4,399,835
Retained earnings	498,517	709,213
	4,945,941	5,151,898
	$7,934,640	$8,603,016

Loan Guarantees (Note 4)

Consolidated Statement of Retained Earnings

	1986	1985
Balance, beginning of year	**$709,213**	$635,398
Add: Net income (loss)	**(210,696)**	73,815
Balance, end of year	**$498,517**	$709,213

Consolidated Statement of Revenues and Expenses

	1986	1985
Revenues		
Scientific and engineering	**$4,054,797**	$3,950,453
Grant from Province of Nova Scotia	**2,233,100**	2,250,000
	6,287,897	6,200,453
Expenses		
Scientific and engineering	**5,590,367**	5,291,228
Administrative and occupancy	**1,123,224**	1,051,021
	6,713,591	6,342,249
Operating loss before investment income	**425,694**	141,796
Investment Income		
Research Endowment Fund	**104,555**	97,232
Short term investments	**110,443**	118,379
	214,998	215,611
Net income (loss)	**$ (210,696)**	$ 73,815

Affiliations

Nova Magnetics Limited (NML)

Nova Magnetics Limited (NML) is a wholly owned subsidiary company of NSRFC. NML was formed to integrate our magnetically coupled products into one corporate identity for ease of technology transfer and is operated by the Product Development Division of NSRFC.

NML designs and manufactures magnetically coupled mechanical drives which replace shaft seals or stuffing boxes on pumps, blowers and other rotating equipment by a "zero leak" solid barrier. This "zero leak" feature is vital in many applications where product leakage is intolerable for safety or other reasons.

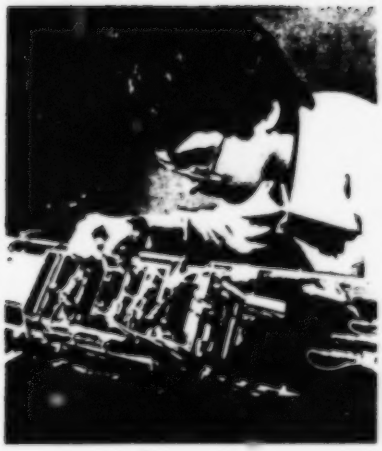
NML is currently supplying magnetic drives and magnetically coupled blowers and pumps to the nuclear, chemical and petrochemical industries, primarily in North America.

NML has licensed a number of patents held by NSRFC and this year has realized its first sale of a product incorporating the patented laminated barrier concept. This new concept reduces dissipated energy and hence barrier heat by many orders of magnitude thus enabling realization of totally sealed zero leakage mechanical drives with power transmission capability well beyond current limits.

Applied Microelectronics Institute (AMI)

The Applied Microelectronics Institute (AMI), a joint venture of the Technical University of Nova Scotia, Dalhousie University and the Nova Scotia Research Foundation Corporation, was established in 1981. Its objective is to develop an outstanding technical competence in microelectronics and to use that competence to assist Nova Scotia industry to utilize this powerful and pervasive technology. Initial financial support has been provided under the Federal Government's national microelectronics support program.

This is the first full year in the Technology Development Centre that the Institute occupies along with a number of small technology based companies. The concept, originally suggested by AMI, is working and the level of activity based on the financial and technical achievements of the constituent companies is growing steadily. AMI's role has included the provision of services such as product development and computing and the placing of subcontracts in connection with its contractual work.



In 1985/86, continued growth in contract revenue enabled AMI to achieve its first profitable year. Much of the growth was based on technical capabilities established earlier but there were also important new developments. Two of these are in the areas of software development and VLSI (very large scale integrated) circuit design. The Institute has demonstrated its capability to manage and successfully complete large projects incorporating sophisticated real time software. The VLSI research program carried out in collaboration with the Technical University of Nova Scotia has advanced from a few simple designs to prove feasibility to the point where a number of complex innovative systems have been developed. This work should start to impact the industrial program of the Institute in the coming year.

Atlantic Institute of Biotechnology (AIB)

The Atlantic Institute of Biotechnology (AIB) was incorporated in February 1986 under the sponsorship of the Nova Scotia Research Foundation Corporation, Dalhousie University, the Technical University of Nova Scotia and the Nova Scotia Agricultural College. The Executive Director of AIB is Dr. R.G.S. Bidwell, a prominent Canadian biological scientist. Initial funding for the Institute has come from the Department of Regional Industrial Expansion.

AIB has been established to bring new bio-processes to Atlantic industry, to make current methods more efficient and to research new industrial applications for these processes.

A substantial base of scientific skills related to biotechnology already exists in Atlantic Canada's universities, colleges and research organizations. The role of AIB will be to establish effective joint ventures between these scientific capabilities and industry to help Atlantic companies to exploit new bio-processes. In a part of Canada where individual companies tend to be small and less able to undertake independent R&D such joint ventures assume particular importance.

Atlantic Farm Mechanization Institute (AFMI)

The Atlantic Farm Mechanization Institute (AFMI), a non-profit corporation, was created in 1985 to carry out research, development and testing of agricultural and woodlot machinery with the objective of solving problems and improving performance of such machines when used under Atlantic Canada conditions.

The Institute is administered by a Board of Directors made up of farmers, extension agricultural engineers and representatives of the farm machinery industry. Created in the form of an "institute without walls", AFMI carries out its activities by drawing together expertise and resources presently existing in various institutions and firms within the region.

The ongoing operations of AFMI are managed by the Nova Scotia Research Foundation Corporation, under the direction of the Institute's Board of Directors. The Institute carries out specific projects on a contract basis for individual clients and agencies.

Current projects include an investigation of disc mower conditioner performance and processing blueberries for the fresh fruit market. Work has begun on assembling a library of technical information on equipment relevant to Atlantic Canadian agriculture.

Staff

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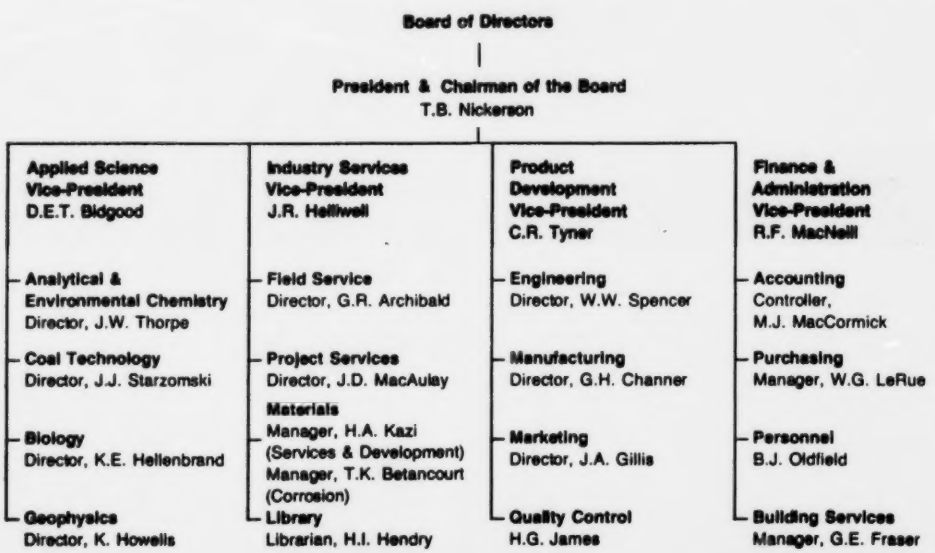

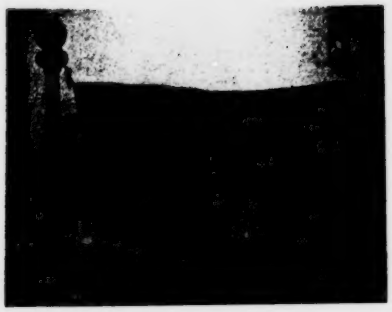

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